



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------|-------------|----------------------|---------------------|------------------|
| 10/805,825 | 03/22/2004 | Kishio Yokouchi | 073338.0494 | 1490 |
| 5073 | 7590 | 12/11/2009 | EXAMINER | |
| BAKER BOTTS L.L.P. | | | SONG, SARAH U | |
| 2001 ROSS AVENUE | | | | |
| SUITE 600 | | | ART UNIT | |
| DALLAS, TX 75201-2980 | | | PAPER NUMBER | |
| | | | 2874 | |
| | | | NOTIFICATION DATE | |
| | | | DELIVERY MODE | |
| | | | 12/11/2009 | |
| | | | ELECTRONIC | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ptomail1@bakerbotts.com
glenda.orrantia@bakerbotts.com

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/805,825 | Applicant(s) YOKOUCHI, KISHIO | |
| | Examiner Sarah Song | Art Unit 2874 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5,8-12,33,36 and 39-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,8-12,33,36 and 39-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's communication filed on August 21, 2009 has been carefully considered and placed of record in the file. Claims 1, 5, 8-12, 3, 36 and 39-43 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 5, 8-12, 33, 36 and 39-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. (U.S. Patent 5,835,646 previous relied upon) in view of Oh et al. (U.S. Patent 6,303,040 previously relied upon) and Kaneko (U.S. Patent Application Publication 2004/0156597 previously relied upon).**

4. Regarding claims 1 and 33, Yoshimura et al. discloses an apparatus for transmitting light (Figure 25) comprising: a first substrate/optical circuit board having a first surface including at least one optically active area; a second substrate having a second surface positioned in opposing spaced apart relationship from the first surface; wherein the second surface contains at least one second optically active area opposing the at least one first optically active area; where the second substrate is supported substantially by the first substrate; a polymer layer (photorefractive index polymer) disposed between the first and second substrate; a waveguide disposed within the polymer layer (the polymer material layer forms the waveguide) between the first and second optically active areas on the first and second surfaces; wherein the waveguide comprises a polymer core and a cladding for transmitting light therebetween (see column 11, lines 36-62).

Art Unit: 2874

5. Yoshimura et al. discloses fluorinated polymer waveguides (column 9, lines 26-27), but does not expressly disclose the first polymer to comprise a fluorinated polymer.
6. Oh et al. discloses that fluorinated polymers are advantageous for low loss at 1550 nm wavelength, commonly used in optical communications (column 3, lines 25-28).
7. One of ordinary skill in the art would have been motivated to provide a fluorinated polymer for the first polymer of Yoshimura et al. in order to provide a low loss device for efficient optical transmission. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a fluorinated first polymer in the device of Yoshimura et al. as taught by Oh et al.
8. Yoshimura et al. does not expressly disclose one or more additional structures embedded within said polymer layer disposed between said first and second substrates.
9. Kaneko discloses a connection structure wherein additional structures (e.g. wiring pattern 24 and soldering section 26) are embedded within the polymer layer 40. Kaneko discloses that embedding such structures provides the benefit of providing additional protection to said structures (§224).
10. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Yoshimura et al. such that one or more additional structures, such as the electrical connections shown in Figure 25, are embedded within the polymer layer in order to provide additional protection for those structures.
11. Regarding claims 5 and 36, Yoshimura et al. discloses at least one of the substrates comprising a plurality of optically active areas (see Figure 22a and 22b for example). It would have been additionally obvious to provide a plurality of optically active areas on both substrates

Art Unit: 2874

by providing arrayed device substrates, thereby facilitating assembly by requiring only a single alignment step.

12. Regarding claims 8 and 39, Yoshimura et al. does not expressly disclose the claimed distance. However, it would have been within the level of ordinary skill in the art to determine an appropriate working distance between the substrates for optimal coupling. Therefore, the modification would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a distance in the claimed range since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See MPEP 2144.05(II)(A).

13. Regarding claims 9, 10, 12, 40, 41 and 43, Yoshimura does not expressly disclose the second substrate to be or comprise an IC, waveguide daughter board, or a semiconductor laser. However, selection of any optical substrate comprising an optically active area for input or output coupling would have been obvious as a matter of design choice.

14. Regarding claims 11 and 42, at least one of said optically active areas comprises a photodiode (PD).

Response to Arguments

15. Applicant's arguments filed August 21, 2009 have been fully considered but they are not persuasive. Applicant states:

Although Kaneko discloses protecting circuit structures with a polymer layer, there is no explanation as to why it would be obvious to provide such additional structural elements in the device of Figure 25 of Yoshimura in the first place. As explained in Applicant's Response to the Office Action mailed August 9, 2007, Kaneko does not disclose the first and second substrates, waveguide, and polymer layer as recited in Claim 1. The fact that Kaneko discloses structures included within a generic polymer

Art Unit: 2874

layer in a device that is different than what is recited in Claim 1 does not make it obvious that any device having a polymer layer may have structures positioned within the polymer layer. Applicant respectfully submits that that is no motivation or suggestion in Yoshimura to place structures within the photorefractive index polymer disclosed in Figure 25 of Yoshimura.

16. Firstly, Yoshimura clearly discloses additional (ball-shaped) structures in Figure 25.

Although Yoshimura does not expressly disclose what those structures embody, one of ordinary skill in the art would have recognized the structures as a solder bump or analogous structure, and corresponding to the similar structure 26 of Kaneko. Therefore, the modification set forth in the rejection above does not comprise providing additional structural elements, as the additional structural elements are already illustrated and disclosed by the Figure of Yoshimura.

17. Furthermore, it is noted that Kaneko is merely relied upon for the teaching and suggestion of embedding additional structures other than a waveguide within an interposed polymer layer (see ¶224 of Kaneko). Although the substrates of Kaneko are not exactly identical to the substrates of Yoshimura, one of ordinary skill in the art would have recognized the same benefits of embedding the peripheral structures of Yoshimura within the polymer layer, the benefit being explicitly taught by Kaneko in ¶224.

18. In conclusion, the above-identified differences between the subject matter sought to be patented and the U.S. Patent to Yoshimura are such that the subject matter, **considered as a whole**, would have been obvious at the time the invention was made to a person having ordinary skill in the art.

Conclusion

Art Unit: 2874

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Song whose telephone number is (571)272-2359. The examiner can normally be reached on T-F 7:30am -6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on 571-272-2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2874

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sarah Song/
Primary Examiner, Art Unit 2874